OUTPUT PENTODE

EL85

Output pentode rated for 6W anode dissipation intended for use in mobile equipment as a r.f. amplifier at frequencies up to 120Mc/s or as an a.f. output valve.

HEATER

V_h	6.3	V
I_h	200	mA

CAPACITANCES

c_{a-g1}	<0.2	pF
c_{in}	4.3	pF
c_{out}	5.1	pF

CHARACTERISTICS

V_a	200	225	250	V
V_{g2}	200	225	250	V
I_a	22.5	26	24	mA
I_{g2}	3.6	4.1	4.1	mA
V_{g1}	−9.4	−10.8	−13.5	V
g_m	3.2	3.2	3.1	mA/V
r_a	90	90	100	kΩ
μ_{g1-g2}	11	11	11	

OPERATING CONDITIONS AS SINGLE VALVE CLASS "A" AMPLIFIER

V_a	200	225	250	V
V_{g2}	200	225	250	V
R_k	360	360	470	Ω
V_{g1}	−9.4	−10.8	−13.5	V
I_a	22.5	26	24	mA
I_{g2}	3.6	4.1	4.1	mA
R_a	9.0	9.0	11	kΩ
$V_{in(r.m.s.)}$ (P_{out} = 50mW)	800	800	700	mV
P_{out}	2.0	2.6	2.55	W
$V_{in(r.m.s.)}$	6.4	7.2	7.5	V
D_{tot}	10	10	10	%

OPERATING CONDITIONS FOR TWO VALVES IN CLASS "AB" PUSH-PULL (Cathode bias)

V_a	200	250	V
V_{g2}	200	250	V
$I_{a(o)}$	2×16	2×20	mA
I_a (max. sig.)	2×17.5	2×22.1	mA
$I_{g2(o)}$	2×2.9	2×3.3	mA
I_{g2} (max. sig.)	2×4.4	2×7.1	mA
*R_k	310	310	Ω
R_{a-a}	12	12	kΩ
P_{out}	4.0	6.8	W
$V_{in(g1-g1)r.m.s.}$	19	24.4	V
D_{tot}	4.5	5.4	%

*Common cathode bias resistor.





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OPERATING CONDITIONS FOR TWO VALVES IN CLASS "B" PUSH-PULL (Fixed bias)

V_a	200	250	V
V_{g2}	200	250	V
V_{g1}	−17.5	−23	V
$I_{a(o)}$	2×5.0	2×5.0	mA
I_a (max. sig.)	2×15	2×19	mA
$I_{g2(o)}$	2×0.8	2×0.9	mA
I_{g2} (max. sig.)	2×5.0	2×7.3	mA
R_{a-a}	16	16	kΩ
P_{out}	3.9	6.8	W
$V_{in(g1-g1)r.m.s.}$	24.4	32	V
D_{tot}	3.5	4.3	%

P_{out} and D_{tot} are measured with fixed bias and therefore represent the power output available during the reproduction of speech and music. When a sustained sine wave is applied to the control-grid the bias across the cathode resistor will readjust itself as a result of the increased anode and screen-grid currents. This will result in approximately 10% reduction in power output.

R.F. OPERATING CONDITIONS FOR SINGLE VALVE, CLASS "C"

R.F. amplifier

f	50	100	Mc/s
V_a	300	300	V
V_{g2}	175	175	V
V_{g1}	−30	−30	V
I_a	19.8	20.2	mA
I_{g2}	4.1	3.9	mA
I_{g1}	1.1	0.9	mA
P_{load}	3.8	3.1	W
η_{load}	64	51	%

Frequency doubler

f_{out}	50	100	Mc/s
V_a	300	300	V
V_{g2}	175	175	V
V_{g1}	−60	−60	V
I_a	19.8	20.3	mA
I_{g2}	3.7	3.5	mA
I_{g1}	1.5	1.2	mA
P_{load}	2.7	2.0	W
η_{load}	45	33	%

Frequency trebler

f_{out}	50	100	Mc/s
V_a	300	300	V
V_{g2}	175	175	V
V_{g1}	−100	−100	V
I_a	19.6	20	mA
I_{g2}	3.6	3.4	mA
I_{g1}	1.8	1.6	mA
P_{load}	2.1	1.7	W
η_{load}	36	28	%

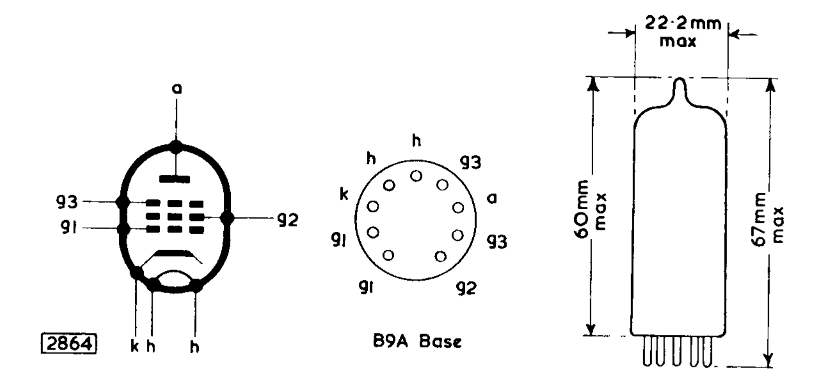
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LIMITING VALUES

$V_{a(b)}$ max.	550	V
V_a max.	300	V
p_a max.	6.0	W
$V_{g2(b)}$ max.	550	V
V_{g2} max.	300	V
p_{g2} max. (zero sig.)	1.0	W
p_{g2} max. (max. sig. speech and music)	2.0	W
$-V_{g1}$ max.	100	V
$-v_{g1(pk)}$ max.	250	V
V_{g1} max. ($I_{g1} = +0.3\mu A$)	−1.3	V
I_k max. (a.f. operation)	35	mA
I_k max. (r.f. operation)	25	mA
R_{g1-k} max.	2.0	MΩ
V_{h-k} max.	100	V
R_{h-k} max.	20	kΩ



FOR R.F. APPLICATIONS IT IS RECOMMENDED THAT PINS 1 AND 2 SHOULD BE STRAPPED TOGETHER AND PINS 6 AND 8 BE CONNECTED SEPARATELY TO THE CHASSIS



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2753 EL85

1. $V_a = V_{g2} = 250V$
2. $V_a = V_{g2} = 200V$

I (mA)

80 60 40 20 0

I_a 1 2

I_{g2} 1 2

V_{g1} (V) −30 −20 −10 0

ANODE AND SCREEN-GRID CURRENTS PLOTTED AGAINST CONTROL-GRID VOLTAGE

